



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,385	07/14/2000	Enric Musoll	P3809	5804

24739 7590 06/05/2003

CENTRAL COAST PATENT AGENCY  
PO BOX 187  
AROMAS, CA 95004

EXAMINER

COLEMAN, ERIC

ART UNIT	PAPER NUMBER
----------	--------------

2183

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/616,385

Applicant(s)

MUSOLL ET AL.

Examiner

Eric Coleman

Art Unit

2183

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eickenmeyer (patent No. 6,061,710)(submitted by applicant) in view of Borkenhagen (patent No. 6,076,157) (submitted by applicant) and Kalafatis (patent No. 6,535,905).

3. Eickemeyer taught the invention substantially as claimed including a data processing ("DP") system comprising:

a) Multi-streaming processor (e.g., see col. 5, lines 29-55);

b) Means and method for selecting which stream to fetch instructions (e.g., see col. 6, line 51-col. 8, line 14); and

4. Branch predictor for forecasting whether a branch alternative of branch instructions will be taken (e.g., see col. 8, lines 43-65).

5. Eickemeyer did not expressly detail (claims 1,6,11,16) a fetch algorithm. However, since the Eickmeyer system predicted whether a branch path was taken or not taken using indicators such as availability of hardware context (e.g., see col. 11, line 53-col. 12, line 64) then it would have been obvious to one of ordinary skill in the art that the Eickemeyer system used determination of whether a branch path for was to be

Art Unit: 2183

taken or not taken in at least one fetch algorithm for determining which thread was to be fetched. On the other hand, Borkenhagen taught the use of a fetch algorithm that included switching threads (e.g., see col. 16, lines 11-38 and col. 12, lines 1-38). Eikemeyer and Borkenhagen however did not expressly (claims 1,6,11,16) detail that the predictor for switching threads or streams included whether a branch was taken. Kalafatis however specifically taught a switch on branch logic (152)(e.g., see col. 10, lines 8-59) that used a scheme or algorithm that determined whether to switch threads depending on whether a branch was predicted as taken.

6. It would have been obvious to one of ordinary skill in the DP art to combine the teachings of Eickemeyer and Borkenhagen. Both references were directed toward solving the problems of efficient switching between instruction streams or threads. One of ordinary skill would have been motivated to incorporate the details of how to algorithmically determine which stream to select as taught by Borkenhagen into the Eickemeyer system because that would have provided more accurate selection of the proper instruction stream.

7. Furthermore it would have been obvious to one of ordinary skill to combine the teachings of Kalafatis with teachings of Eikemeyer as they were both directed to the problems of efficient switching between instruction streams or threads. One of ordinary skill would have been motivated to incorporate the Kalafatis teaching of a switch on branch logic for switching threads when a branch was predicted taken in order to reduce the allocation of processor resource to that specific thread in view of the possibility of that specific thread being mispredicted (e.g., see col. 10, lines 8-24 of Kalafatis).

Art Unit: 2183

8. As per claims 2,3,12,13, Borkenhagen and Eickemeyer did not specify this limitation. Kalafatis however taught the limitation of switching to the target location for fetching instructions when a branch was predicted as taken and to continue sequential fetching when a branch was not taken. As to the condition of a cache miss (claims 7,8,17,18) Eickemeyer taught the switching of instruction streams on a cache miss (e.g., see col. 9, lines 7-25) and continuing on the same stream on a cache hit (e.g., see col. 8, line 43-col. 9, line 6).

9. As per claims 4,5,9,10,14,15,19,20,21-24 Eickenmeyer did not specify this limitation. Borkenhagen taught the use of predictors to determine if a branch was to be taken or not (e.g., see col. 16, lines 11-38) and dispatching the instructions to execution units (e.g., see col. 8, lines 15-39) and selective switching on a cache miss (e.g., see col. 10, line 58-col. 11, line 17). Eickemeyer also taught selecting criteria for determining a thread switch (e.g., see col. 9, lines 7-57).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Coleman whose telephone number is (703) 305-9674. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (703) 305-9712. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.


Application/Control Number: 09/616,385

Page 5

Art Unit: 2183

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-305-3900.

EC  
June 1, 2003

  
**ERIC COLEMAN**  
**PRIMARY EXAMINER**